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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHACE, CHRISTIAN	

ART UNIT	PAPER NUMBER
2187	

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,683	HALSTEAD ET AL.	
	Examiner	Art Unit	
	Christian P. Chace	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 January 2005 has been entered.

Response to Amendment

This Office action has been issued in response to amendment filed 6 December 2004, now entered upon request with RCE, as discussed supra. Claims 1-19 are pending. Applicants' arguments have been carefully and respectfully considered in light of the instant amendments, but they are not persuasive. However, as this is the first action on the merits following an RCE, this action is NOT final.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations added in the instant, and previous amendments must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The subject matter of the instant amendments are new matter.

Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to independent claims 1, 7, and 14, using claim 1 as representative, claim 1 recites, "*after* causing the first volume to change from a source volume to a destination volume and causing the second volume to change from a destination volume to a source volume, *initiating a synchronization of volumes to cause data to be copie[d] from the source volume to the destination volume*," and, "prior to *completion* of the synchronization, resuming communication..." (emphasis added) do not appear to be disclosed in the instant application as filed. For example, the word "synchronization" does not appear in the specification at all. The only mention of anything similar might be in paragraph 35 (page 13, lines 10-15), which discusses a "Sync command" being provided to R1 to cause the tracks of the local mirror corresponding to R1 to be invalidated, thus initiating a background copy of data from R2 to R1, which seems to teach away from the instant claim language, as communication is not, in fact, "resumed," but initiated.

In addition, claim 1, again being representative of claims 7 and 14, recites, "and wherein, in response to a write of particular data to the second volume, the particular data is transferred from the second volume to the first volume *irrespective of whether the synchronization is complete.*" (Emphasis added). Similar to the remarks supra, the

completion of synchronization does not appear to be disclosed in the instant application as filed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, herein representative of claims 7 and 14 as well, the claim recites, "prior to completion of synchronization, resuming communication between the first and second volumes..." Synchronizing volumes, in the context of swapping, inherently requires communication between them, as the whole process of synchronizing the data in one volume to that of the other volume requires communication between the two volumes being synchronized. Accordingly, examiner is unsure how communication is "resumed" prior to completion of the synchronization, which could imply that at least some synchronization occurs without communication.

In addition, the limitation that recites, "in response to a write of particular data to the second volume, the particular data is transferred from the second volume to the first volume irrespective of whether the synchronization is complete" does not appear to make sense. In response to a write of particular data to the second volume, the particular data is transferred from the second volume to the first volume is, by definition, synchronizing the data on the volumes. Accordingly, it cannot be completed

"irrespective" of synchronization being complete – the synchronization can't be complete if it is still synchronizing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ofek et al (US Patent 5,889,935).

With respect to independent claim 1, in so far as it is clear, a method of reversing a communication path between a first volume on a first storage device and a second volume on a second storage device is disclosed in figure 15 as using either of the volumes as a primary volume. Also, column 34, lines 60-64 recites reversing the roles of the R1 and R2 volumes, thereby reversing the communication path, as the host would then directly access the R2 volume and mirror to the R1 volume.

Suspending communication between the first and second volumes while maintaining operations for other volumes of the storage devices is disclosed in figure 15, #480 as suspending host processing with the R1 volume. If host processing is suspended with the R1 volume, then there is nothing to mirror to the R2 volume, so communication is inherently suspended to that volume as well. As #480 solely discloses suspension of operations for R1 and R2 (as discussed supra), it is implicitly anticipated that no other volumes are affected by the suspension.

Causing the first volume to change from a source volume to a destination volume without destroying the first volume and causing the second volume to change from a destination volume to a source volume without destroying the second volume is disclosed in figure 15 as using either of the volumes as a primary volume. Both volumes are merely synchronized, not destroyed. Also, column 34, lines 60-63 discuss the role reversal of the two volumes. The primary volume is the source volume, and the secondary volume is the destination volume, before reversal. Once reconfigured, the secondary volume is the source volume, as it would be directly accessed by the host, and the primary volume is the destination volume, that would be remotely mirrored to from the source volume.

After causing the first volume to change from a source volume to a destination volume and causing the second volume to change from a destination volume (swapping), initiating a synchronization of volumes to cause data to be copie[d] from the source to the destination volume (synchronized) is disclosed in column 10, lines 39-47.

Resuming communication between the first and second volumes and resuming data access operations to the first and second volumes wherein, in response to a data access operation to the second volume, and valid data for the access operation existing only in the first volume, the data access operation to the second volume is satisfied by accessing data from the first volume (wherein, in response to a write of particular data to the second volume, the particular data being transferred from the second volume to the first volume, which is, by definition, synchronization) is disclosed in figure 11, #457 and in column 10, lines 39-47, which discusses access commands going to the

accessible device (volume) and synchronizing later when the original device becomes available again. Ofek et al literally recite, "Accordingly, each data storage device keeps data validity information about its mirrored device. If for some reason a device is not accessible, either the primary or the secondary device, every new write command goes to the accessible mirrored device along with information that the not accessible device has a track that is not valid. As soon as the non-accessible device becomes accessible, then, as a background operation, the drives re-synchronize." See paragraph 35 of the instant specification.

However, allowing access to one of the volumes (either one, meaning both in general – applicants do not specify that two accesses occur at the same time) prior to synchronization is disclosed as a data access operation, such as a "read" is allowed before synchronization completes, as discussed in column 3, lines 47-50, as well as in column 12, line 67 into column 13, line 4.

It is also important to note that column 10 discusses the remote mirroring facility in general, while referring to figure 1 and 4. Column 34 discusses data migration in the remote mirroring facility discussed in column 10. See column 33, line 40, e.g.

In addition, examiner respectfully directs applicants to column 15, lines 2-5 and lines 24-25, column 18, lines 12-16, column 21, lines 1-4, column 27, lines 30-40, and column 35, lines 48-51 for additional support of accessing and communications to, from, and between the devices and hosts before synchronization is complete.

With respect to claims 2, 9, and 15, causing the first volume to change from a source volume to a destination volume including modifying a table of the first storage

device is disclosed in column 33, line 60 into column 34, line 17, as shown in figure 14. The table is the bitmap array, and the modification of that table occurs in steps #472 and #473.

With respect to claims 3, 10, and 16, causing the second volume to change from a source volume to a destination volume including modifying a table of the second storage device is disclosed in figure 14, #476 and #477. Again, the table is the other half of the bitmap array (as opposed to the first half discussed supra with respect to claims 2, 9, and 15), and the switching and copying in those steps is the modification of that table.

With respect to claims 4, 11, and 17, suspending communication including setting the first volume to a "not ready" state is disclosed in figure 15, #480 as suspending host processing to the R1 volume. If processing is suspended, then, inherently, communication is suspended, as communication is "processing" and *vice-versa*. Also, if there is no processing there is nothing to communicate.

With respect to claims 5, 12, and 18, resuming communication including setting the second volume to a "ready" state is disclosed in column 34, lines 62-63, which discloses the host directly accessing the R2 volume, which is the secondary volume.

With respect to claims 6, 13, and 19, returning a result indicating successfully reversing the communication path is disclosed in figure 15 as processing resuming using either of the volumes as a primary volume. Accordingly, if the R2 volume is, indeed, being used as the primary volume, and processing resumes, then the communication path has inherently been successfully reversed.

With respect to independent claim 7, in so far as it is clear, a method of reversing a communication path between a first volume on a first storage device and a second volume on a second storage device is disclosed in figure 15 as using either of the volumes as a primary volume. Also, column 34, lines 60-64 recites reversing the roles of the R1 and R2 volumes, thereby reversing the communication path, as the host would then directly access the R2 volume and mirror to the R1 volume.

Suspending communication between the first and second volumes while maintaining operations for other volumes of the storage devices is disclosed in figure 15, #480 as suspending host processing with the R1 volume. If host processing is suspended with the R1 volume, then there is nothing to mirror to the R2 volume, so communication is inherently suspended to that volume as well. As #480 solely discloses suspension of operations for R1 and R2 (as discussed supra), it is implicitly anticipated that no other volumes are affected by the suspension.

Causing the first volume to change from a source volume to a destination volume without destroying the first volume and causing the second volume to change from a destination volume to a source volume without destroying the second volume is disclosed in figure 15 as using either of the volumes as a primary volume. Both volumes are merely synchronized, not destroyed. Also, column 34, lines 60-63 discuss the role reversal of the two volumes. The primary volume is the source volume, and the secondary volume is the destination volume, before reversal. Once reconfigured, the secondary volume is the source volume, as it would be directly accessed by the host,

and the primary volume is the destination volume, that would be remotely mirrored to from the source volume.

After causing the first volume to change from a source volume to a destination volume and causing the second volume to change from a destination volume (swapping), initiating a synchronization of volumes to cause data to be copie[d] from the source to the destination volume (synchronized) is disclosed in column 10, lines 39-47.

Resuming communication between the first and second volumes and resuming data access operations to the first and second volumes wherein, in response to a data access operation to the second volume, and valid data for the access operation existing only in the first volume, the data access operation to the second volume is satisfied by accessing data from the first volume (wherein, in response to a write of particular data to the second volume, the particular data being transferred from the second volume to the first volume, which is, by definition, synchronization) is disclosed in figure 11, #457 and in column 10, lines 39-47, which discusses access commands going to the accessible device (volume) and synchronizing later when the original device becomes available again. Ofek et al literally recite, "Accordingly, each data storage device keeps data validity information about its mirrored device. If for some reason a device is not accessible, either the primary or the secondary device, every new write command goes to the accessible mirrored device along with information that the not accessible device has a track that is not valid. As soon as the non-accessible device becomes accessible, then, as a background operation, the drives re-synchronize." See paragraph 35 of the instant specification.

However, allowing access to one of the volumes (either one, meaning both in general – applicants do not specify that two accesses occur at the same time) prior to synchronization is disclosed as a data access operation, such as a "read" is allowed before synchronization completes, as discussed in column 3, lines 47-50, as well as in column 12, line 67 into column 13, line 4.

It is also important to note that column 10 discusses the remote mirroring facility in general, while referring to figure 1 and 4. Column 34 discusses data migration in the remote mirroring facility discussed in column 10. See column 33, line 40, e.g.

In addition, examiner respectfully directs applicants to column 15, lines 2-5 and lines 24-25, column 18, lines 12-16, column 21, lines 1-4, column 27, lines 30-40, and column 35, lines 48-51 for additional support of accessing and communications to, from, and between the devices and hosts before synchronization is complete.

With respect to claim 8, the command being a "single multihop, multiexecute" command that causes operations to be performed on the first and second storage devices is disclosed as "migrate active volume" in figure 14. Page 9, lines 21-23 of the instant specification were looked to in order to define this type of command, as examiner is unfamiliar with the terminology. From the instant citation, "The multihop/multiexecute system command is a single system command that is provided to multiple storage devices and indicates operations to be performed by the multiple storage devices." Accordingly, the "migrate active volume" command is a command in the (single) system that is provided to multiple storage devices (primary and secondary volumes) and indicates operations to be performed by the devices (migration).

With respect to independent claim 14, a computer program product is disclosed in column 33, lines 50-53 as a task using software.

Also with respect to independent claim 14, in so far as it is clear, a method of reversing a communication path between a first volume on a first storage device and a second volume on a second storage device is disclosed in figure 15 as using either of the volumes as a primary volume. Also, column 34, lines 60-64 recites reversing the roles of the R1 and R2 volumes, thereby reversing the communication path, as the host would then directly access the R2 volume and mirror to the R1 volume.

Suspending communication between the first and second volumes while maintaining operations for other volumes of the storage devices is disclosed in figure 15, #480 as suspending host processing with the R1 volume. If host processing is suspended with the R1 volume, then there is nothing to mirror to the R2 volume, so communication is inherently suspended to that volume as well. As #480 solely discloses suspension of operations for R1 and R2 (as discussed supra), it is implicitly anticipated that no other volumes are affected by the suspension.

Causing the first volume to change from a source volume to a destination volume without destroying the first volume and causing the second volume to change from a destination volume to a source volume without destroying the second volume is disclosed in figure 15 as using either of the volumes as a primary volume. Both volumes are merely synchronized, not destroyed. Also, column 34, lines 60-63 discuss the role reversal of the two volumes. The primary volume is the source volume, and the secondary volume is the destination volume, before reversal. Once reconfigured, the

secondary volume is the source volume, as it would be directly accessed by the host, and the primary volume is the destination volume, that would be remotely mirrored to from the source volume.

After causing the first volume to change from a source volume to a destination volume and causing the second volume to change from a destination volume (swapping), initiating a synchronization of volumes to cause data to be copie[d] from the source to the destination volume (synchronized) is disclosed in column 10, lines 39-47.

Resuming communication between the first and second volumes and resuming data access operations to the first and second volumes wherein, in response to a data access operation to the second volume, and valid data for the access operation existing only in the first volume, the data access operation to the second volume is satisfied by accessing data from the first volume (wherein, in response to a write of particular data to the second volume, the particular data being transferred from the second volume to the first volume, which is, by definition, synchronization) is disclosed in figure 11, #457 and in column 10, lines 39-47, which discusses access commands going to the accessible device (volume) and synchronizing later when the original device becomes available again. Ofek et al literally recite, "Accordingly, each data storage device keeps data validity information about its mirrored device. If for some reason a device is not accessible, either the primary or the secondary device, every new write command goes to the accessible mirrored device along with information that the not accessible device has a track that is not valid. As soon as the non-accessible device becomes accessible,

then, as a background operation, the drives re-synchronize." See paragraph 35 of the instant specification.

However, allowing access to one of the volumes (either one, meaning both in general – applicants do not specify that two accesses occur at the same time) prior to synchronization is disclosed as a data access operation, such as a "read" is allowed before synchronization completes, as discussed in column 3, lines 47-50, as well as in column 12, line 67 into column 13, line 4.

It is also important to note that column 10 discusses the remote mirroring facility in general, while referring to figure 1 and 4. Column 34 discusses data migration in the remote mirroring facility discussed in column 10. See column 33, line 40, e.g.

In addition, examiner respectfully directs applicants to column 15, lines 2-5 and lines 24-25, column 18, lines 12-16, column 21, lines 1-4, column 27, lines 30-40, and column 35, lines 48-51 for additional support of accessing and communications to, from, and between the devices and hosts before synchronization is complete.

Response to Arguments

With respect to applicants' arguments that the claims, as amended herein, are shown by the present drawings, examiner respectfully disagrees. Applicants note that the application as originally filed describes initiating a background copy for R1/R2 synchronization once communication between the R1 and R2 devices is resumed. Applicants cite page 13, lines 10-14. Examiner notes that this description is with respect to figure 2. Applicants then continue by arguing, "*Thus*, (emphasis added) the step 196 of the flow chart 50' of Figure 9 resumes communication between the R1 and

R2 devices, and, in accordance with the description on page 13, initiates synchronization of the volumes." However, this does not appear to be linked to the "create" command of figure 2. The "swap" command of figure 9 is disclosed as an "alternative embodiment," and one of ordinary skill in the art is not enabled by the disclosure as filed to apply the details of the "create" command" in figure 2 to the details of the "swap" command of figure 9, as they are originally disclosed as being different commands altogether, with none of the figures showing them operating together *as claimed*.

With respect to applicants' argument that Ofek does not disclose a mechanism of resuming operation without first synchronizing the R1 and R2 volumes when the R1 and R2 volumes have been swapped, examiner respectfully disagrees. In fact, column 10, lines 39-47 does, indeed, disclose resuming operation with the accessible volume before both are synchronized. Ofek keeps track of writes to the accessible volume so that it may be synchronized later with the inaccessible volume.

With respect to applicants' argument that Ofek also discloses host processing being suspended prior to the synchronization and the swap, and is only resumed after the synchronization and swap have taken place, examiner respectfully disagrees. Applicants continue by reciting column 34, lines 50-51, which merely disclose the suspension of host processing *with the primary (R1) volume*, not both. As discussed supra with respect to column 10, lines 39-47, if one device is not accessible, access goes to the other device. Applicants continue by asserting that Ofek clearly contemplates a system whereby data accesses to R1 and R2 are suspended while the

disclosed synchronization and swap are occurring. Examiner respectfully disagrees. Reads are accesses, and are disclosed as occurring during synchronization (because synchronization is a background process, and processing continuing during a background process is what the definition of a background process is, e.g.) and swapping is disclosed in column 15, lines 2-5 and lines 24-25, column 18, lines 12-16, column 21, lines 1-4, column 27, lines 30-40, and column 35, lines 48-51, for example. It is only accesses to one of the volumes that are not resumed until after the swap.

With respect to applicants' argument that the disclosure at column 10 of Ofek precedes the disclosure at column 14 and has nothing to do with swapping R1 and R2 as disclosed by Ofek at column 34, examiner respectfully disagrees, and also notes that this is irrelevant. It has been well established that a rejection under 35 USC 102 does not require more than a single reference anticipating each and every claim limitation. However, examiner finds that they are, indeed, related in that swapping may be a result of the failure of a disk, as applicants point out in the instant argument. See column 13, lines 9-12, for example.

With respect to applicants' argument again that Ofek does not provide a teaching for allowing data accesses to R1 or R2 during the swap process or how to perform the swap process without first having to synchronize R1 and R2, examiner respectfully disagrees, and refers applicants to the discussion of a read command and background operation definition as discussed supra.

Applicants continue by asserting that Ofek does not teach initiating a synchronization after swapping the first and second volumes. However, Ofek discloses just this feature at column 10, lines 39-47:

"As soon as the non-accessible device becomes accessible [swapped, e.g.], then, automatically, as a *background operation*, the drives re-synchronize."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 571.272.4190. The examiner can normally be reached on MAXI FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571.272.4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christian P. Chace
Examiner
Art Unit 2187